National Institute of Environmental Health Sciences

Global alteration of freshwaters: Influences on human and environmental well-being

Author(s): Naiman RJ, Dudgeon D
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Abstract:

Human and environmental well-being-including disease resistance or avoidance, good nutrition, and species-appropriate population dynamics-are congruent with sustained healthy conditions. Unfortunately, hydrological alterations designed to benefit human societies often have unintended-and sometimes severe-consequences for the environment and the biodiversity it supports, and hence affecting billions of people. Improving this situation necessitates new water-resource developments, better water-use efficiency, and a reduction of contamination. Overall, the influences of existing and future freshwater (FW) regimes on human and environmental well-being are varied and wide-ranging. Furthermore, the scale is daunting: >1 billion people currently live in basins likely to require river management interventions for climate change alone. Global declines in FW biodiversity, in the nutritional value, and abundance of harvestable FW and riparian products, as well as deterioration in habitat quality for many species, require solutions; as do ongoing increases in the spread of FW-related diseases and non-native species. Modifications to FWs are now manifested in population declines and non-sustainable demographics for many aquatic species, as well as in deterioration of human health. In response, scientists, policy-makers, and water users are beginning to conceptualize FWs in terms of a global water system (GWS) to better understand and manage anthropogenic impacts. This involves identifying the ecological and policy implications of changes to the GWS, establishing international programs to understand and resolve major social and environmental issues arising from those changes, and developing broad-based mitigation or restoration techniques (e.g.,environmental flow methodologies). Achieving these goals is paramount for maintaining human health as well as for the FW ecosystems upon which we depend. © 2010 The Ecological Society of Japan.

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Resource Description

Communication:

resource focus on research or methods on how to communicate or frame issues on climate change; surveys of attitudes, knowledge, beliefs about climate change

A focus of content

Communication Audience:

audience to whom the resource is directed

Policymaker

Exposure : ☑

weather or climate related pathway by which climate change affects health

Ecosystem Changes, Food/Water Quality, Food/Water Security

Geographic Feature: ☑

resource focuses on specific type of geography

Freshwater

Geographic Location: ☑

resource focuses on specific location

Global or Unspecified

Health Impact: ☑

specification of health effect or disease related to climate change exposure

Health Outcome Unspecified

Mitigation/Adaptation: ☑

mitigation or adaptation strategy is a focus of resource

Adaptation

Population of Concern: A focus of content

Population of Concern: ☑

populations at particular risk or vulnerability to climate change impacts

Children

Resource Type: ☑

format or standard characteristic of resource

Review

Timescale: ☑

time period studied

Time Scale Unspecified

Vulnerability/Impact Assessment: ☑

resource focus on process of identifying, quantifying, and prioritizing vulnerabilities in a system

A focus of content